Trend Study 24-6-97

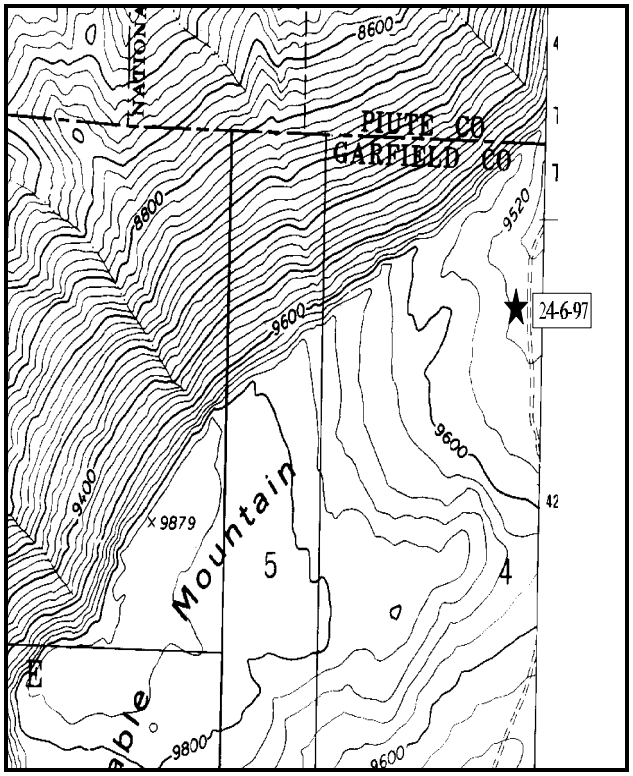
Study site name: Table Mountain . Range type: Burn .

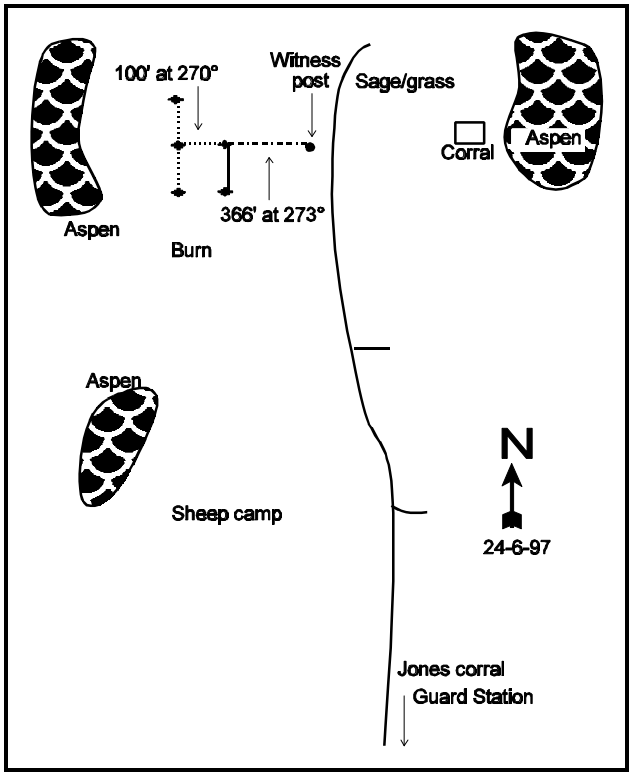
Compass bearing: frequency baseline 163 degrees.

First frame placement on frequency belts 5 feet. Frequency belt placement; line 1 (11 & 95ft), line 2 (34ft), line 4 (71ft).

LOCATION DESCRIPTION

From the Jones Corral Guard Station, head north towards Table Mountain. Go 0.35 miles to a fork, stay right and continue 0.8 miles to a fork. Stay right and continue 1.3 miles to a fork and cattleguard. Keep right and go 0.1 miles to another fork. Bear left and continue 2.3 miles to a fork. Stay right and continue north for 1.4 miles to a burned flat surrounded by aspens. Look for a 4' tall fencepost on the left side of the road. This witness post marks the location of the study, which starts about 120 yards west of the road. The 0-foot baseline stake is marked by a red browse tag #9004.





Map Name: Junction Diagrammatic Sketch

Township 31S , Range 2 1/2W , Section 4 UTM 4221463.607 N, 401219.422 E

DISCUSSION

Trend Study 24-6 (50-6)

The Table Mountain study is located on a prescribed burn on Table Mountain at an elevation of 9,500 feet. The terrain slopes gradually to the southeast with a slope of 7%. This is a key area for elk and deer during the summer. The site once supported an extensive stand of mountain big sagebrush which is reestablishing itself on the site. A variety of grasses now dominate and provide good ground cover. Adjacent stands of aspen provide escape cover for big game that use this area. Pellet group data from 1997 estimate 53 deer, 61 elk, and 10 cow use days/acre. This is a sheep allotment which has been grazed by 720 sheep from July 1st to September 30th . This unit has been in non-use status since 1995.

The soils are deep, rocky, and derived from volcanic parent material. The soil is well drained and not compacted with an effective rooting depth (see methods) estimated at almost 15 inches. It has a brown-orange color, has a loam texture and a moderately acidic pH (6.1). The vegetation is continuous and intact, leaving little bare ground unprotected. Erosion is not a problem on the site.

Oregon grape and snowberry sprouted after the fire and they dominated the browse composition in 1987 and 1991. Mountain big sagebrush was sparsely distributed over the burn, at a density of only 33 plants/acre in 1987 and 66 in 1991. The much larger sample used in 1997 estimated 1,640 sagebrush plants/acre, 61% of which are young plants. Density of snowberry declined 53%, primarily due to the increased sample size since there are few dead plants in the population. The majority of the snowberry were heavily hedged (95%) in 1987, but use has steadily declined since with 20% heavily hedged in 1991 and only 5% in 1997. Vigor is normal and percent decadence low at 11%. This same trend of declining heavy use is seen in sagebrush. Current use is mostly light.

Woods rose was not sampled on the site in 1987 or 1991, but it was present in the area and heavily hedged. Sheep that used this allotment then appear to have utilized a significant portion of the forage produced by these two shrubs. The larger sample utilized in 1997 picked up some Woods rose (220 plants/acre), however none appear to have been utilized this season.

The herbaceous understory dominates the site with 12 grass species providing 22% cover and 20 species of forbs producing an additional 16% cover. The most abundant grass is Letterman needlegrass which provides nearly half (48%) of the grass cover. Bluebunch wheatgrass, mutton bluegrass, and needle-and-thread are also common. The forb composition is dominated by silvery lupine which produces 53% of the forb cover. The only other forbs which provide more than 1% cover include a phlox and dandelion. Some misidentification between the *Poa* species (*Poa fendleriana, Poa pratensis* and *Poa secunda*) appears to have occurred in 1987 causing large changes in nested and quadrat frequencies.

1991 TREND ASSESSMENT

Vegetative basal cover has increased to almost 14% with bare ground going down to about 9%. Percent rock decreased slightly and percent litter increased slightly. Soil trend is improving. For the browse, normally the key species would be mountain big sagebrush, but with only 66 plants/acre it cannot be counted on very much. Snowberry on this site is heavily used. It's density has decreased by 5% with a slight increase in percent decadency. Trend is improving but still poor since the prescribed burn. The trend for the herbaceous understory is, for the most part improving. However, most of the species for both grasses and forbs are increaser's in habit, which is not an ideal situation. Other species would be more preferred.

TREND ASSESSMENT
soil - slightly upward
browse - slightly upward, but still poor composition with low density for mountain big sagebrush
herbaceous understory - slightly upward, but poor composition with too many increaser species

1997 TREND ASSESSMENT

Trend for soil is stable with excellent protective ground cover. Trend for browse is up for mountain big sagebrush with a 96% increase in density. Reproductive potential and the proportion of young plants in the population have both increased dramatically since 1991. Utilization is mostly light, vigor good with few decadent plants. Snowberry has declined in density by 53%, however this appears to be due more to the larger sample size used in 1997 which better estimates shrub densities. The snowberry appears to have a stable, lightly utilized population. Trend for the herbaceous understory is stable even though there was a decline in the sum of nested frequency for both grasses and forbs. Looking at the photo point comparisons between years, it appears that the decline in nested frequency of herbaceous species is a natural thinning process after a flush of growth following the burn. Grasses and forbs are very abundant and produce 37% cover on the site and browse cover, for all species, is only 9%.

TREND ASSESSMENT
soil - stable
browse - up for sagebrush
herbaceous understory - stable

HERBACEOUS TRENDS --
Herd unit 24 , Study no: 6

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %
		'87	'91	'97	'87	'91	'97	'97
G	Agropyron spicatum	96	90	103	41	36	41	3.33
G	Agropyron trachycaulum	$_{b}$64	$_{b}$52	$_{a}$16	27	20	7	.18
G	Bromus anomalus	$_{ab}$14	$_{b}$29	$_{a}$3	8	13	3	.02
G	Carex spp.	17	26	33	9	10	11	.56
G	Festuca ovina	$_{b}$155	$_{a}$8	$_{a}$17	60	5	6	.22
G	Koeleria cristata	$_{a}$5	$_{b}$112	$_{a}$27	3	46	13	.24
G	Poa fendleriana	$_{a}$60	$_{b}$148	$_{a}$86	26	65	41	1.69
G	Poa pratensis	$_{a}$7	$_{b}$91	$_{a}$4	2	35	2	.06
G	Poa secunda	$_{b}$146	$_{a}$8	$_{a}$-	58	3	-	-
G	Sitanion hystrix	55	54	46	24	23	22	.95
G	Stipa columbiana	$_{a}$-	$_{a}$-	$_{b}$15	-	-	7	.78
G	Stipa comata	$_{a}$5	$_{b}$77	$_{b}$91	3	32	38	2.86
G	Stipa lettermani	$_{a}$163	$_{b}$266	$_{a}$178	61	91	55	9.94
Total for Grasses		787	961	619	322	379	246	20.88
F	Achillea millefolium	7	6	3	3	2	1	.03
F	Agoseris glauca	$_{a}$-	$_{a}$1	$_{b}$39	-	1	18	.09

Type	Species	Nested Frequency '87	'91	'97	Quadrat Frequency '87	'91	'97	Average Cover % '97
F	Antennaria rosea	2	3	-	1	1	-	-
F	Arabis pulchra	$_{b}$166	$_{a}$1	$_{a}$1	69	1	1	.00
F	Astragalus convallarius	$_{a}$-	$_{c}$48	$_{b}$23	-	26	13	.21
F	Astragalus spp.	-	-	1	-	-	1	.00
F	Calochortus nuttallii	-	-	4	-	-	2	.01
F	Chenopodium album (a)	-	-	14	-	-	8	.04
F	Crepis acuminata	-	-	5	-	-	2	.06
F	Erigeron eatonii	$_{a}$-	$_{b}$15	$_{a}$6	-	9	2	.03
F	Eriogonum flavum	-	6	-	-	2	-	-
F	Eriogonum racemosum	5	10	13	3	4	6	.11
F	Lupinus argenteus	97	95	105	47	55	53	8.69
F	Lychnis drummondii	$_{a}$-	$_{b}$86	$_{a}$-	-	42	-	-
F	Lygodesmia spp.	-	-	4	-	-	2	.01
F	Penstemon spp.	$_{b}$107	$_{a}$21	$_{a}$7	43	9	6	.06
F	Phlox pulvinata	$_{b}$145	$_{b}$156	$_{a}$65	50	54	21	4.34
F	Potentilla diversifolia	$_{a}$-	$_{a}$4	$_{b}$12	-	1	7	.06
F	Potentilla spp.	6	3	6	3	2	3	.06
F	Senecio multilobatus	$_{ab}$8	$_{a}$-	$_{b}$16	3	-	7	.06
F	Taraxacum officinale	$_{c}$303	$_{b}$228	$_{a}$139	97	88	58	2.26
F	Thermopsis montana	-	-	2	-	-	1	.03
F	Tragopogon dubius	6	6	9	3	3	4	.07
F	Unknown forb-perennial	7	-	-	3	-	-	-
Total for Forbs		859	689	474	325	300	216	16.27

Values with different subscript letters are significantly different at % = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 24 , Study no: 6

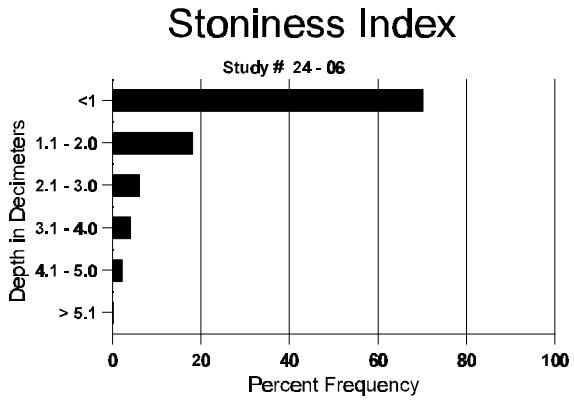
Type	Species	Strip Frequency '97	Average Cover % '97
B	Artemisia tridentata vaseyana	38	3.08
B	Chrysothamnus viscidiflorus viscidiflorus	1	-
B	Mahonia repens	11	.34
B	Ribes cereum inebrians	2	.15
B	Rosa woodsii	2	.03
B	Symphoricarpos oreophilus	43	5.71
Total for Browse		97	9.31

BASIC COVER --
Herd unit 24 , Study no: 6

Cover Type	Nested Frequency '97	Average Cover % '87	'91	'97
Vegetation	367	11.75	13.50	52.29
Rock	275	7.75	6.25	7.28
Pavement	311	19.75	19.75	10.85
Litter	388	48.50	52.00	33.23
Cryptogams	30	0	0	.39
Bare Ground	169	12.25	8.50	5.76

SOIL ANALYSIS DATA --
Herd Unit 24, Study no: 06

Effective rooting depth (inches)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
14.8	47.2 (16.3)	6.1	38.4	35.1	26.6	5.0	47.1	454.4	.6



PELLET GROUP FREQUENCY --
Herd unit 24 , Study no: 6

Type	Quadrat Frequency '97
Rabbit	4
Elk	15
Deer	18
Cattle	2

BROWSE CHARACTERISTICS --
Herd unit 24 , Study no: 6

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata vaseyana																		
S	87	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	91	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	16	-	-	22	-	-	-	-	-	38	-	-	-	760			38
Y	87	-	1	-	-	-	-	-	-	-	1	-	-	-	33			1
	91	-	1	-	-	-	-	-	-	-	1	-	-	-	33			1
	97	44	-	-	6	-	-	-	-	-	50	-	-	-	1000			50
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	1	-	-	-	-	-	-	-	-	1	-	-	-	33	10	14	1
	97	25	5	-	1	-	-	-	-	-	28	3	-	-	620	22	38	31
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	280			14

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	100%	00%	00%	+50%
'91	50%	00%	00%	+96%
'97	06%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	33	Dec:	0%
	'91	66		0%
	'97	1640		1%

Chrysothamnus viscidiflorus																		
D	87	-	-	1	-	-	-	-	-	-	-	-	-	1	33			1
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	100%	100%	Died out
'91	00%	00%	00%	None
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	33	Dec:	100%
	'91	0		0%
	'97	0		0%

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Chrysothamnus viscidiflorus viscidiflorus																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	1	-	-	1	-	-	-	2	-	-	-	66	6	6	2
	97	-	-	-	1	-	-	-	-	-	1	-	-	-	20	13	14	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	Appeared
'91	00%	100%	00%	-70%
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'91	66		-
	'97	20		-

Mahonia repens																		
S	87	51	-	-	-	-	-	-	-	-	51	-	-	-	1700			51
	91	4	-	-	-	-	-	-	-	-	4	-	-	-	133			4
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	79	2	-	-	-	-	-	-	-	81	-	-	-	2700			81
	91	129	1	-	11	-	-	2	-	-	134	9	-	-	4766			143
	97	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	87	131	-	-	-	-	-	-	-	-	131	-	-	-	4366	4	4	131
	91	185	8	4	20	2	-	2	-	-	200	21	-	-	7366	3	3	221
	97	84	-	-	8	-	-	-	-	-	92	-	-	-	1840	4	6	92
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	.94%	00%	00%	+42%
'91	03%	01%	00%	-84%
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	7066	Dec:	0%
	'91	12198		1%
	'97	1940		0%

Pseudotsuga menziesii																		
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	None
'91	00%	00%	00%	None
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'91	0		-
	'97	0		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ribes spp.																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	0	42	46	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	None
'91	00%	00%	00%	None
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'91	0		-
	'97	0		-

Ribes cereum inebrians																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	1	-	-	-	-	1	-	-	2	-	-	-	66	18	19	2
	97	2	-	-	-	-	-	-	-	-	2	-	-	-	40	42	60	2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	Appeared
'91	50%	00%	00%	-39%
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'91	66		-
	'97	40		-

Rosa woodsii																		
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	97	6	-	-	-	-	-	-	-	-	6	-	-	-	120	8	9	6

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	00%	00%	00%	None
'91	00%	00%	00%	Appeared
'97	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	0	Dec:	-
	'91	0		-
	'97	220		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Symphoricarpos oreophilus																		
S	87	-	6	2	-	-	-	-	-	-	8	-	-	-	266			8
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	1	-	-	1	-	-	-	-	-	2	-	-	-	40			2
Y	87	-	4	35	-	-	-	-	-	-	29	-	-	10	1300			39
	91	6	12	1	-	-	-	-	-	-	17	-	2	-	633			19
	97	4	-	-	2	-	-	-	-	-	6	-	-	-	120			6
M	87	-	-	46	-	-	-	-	-	-	42	-	-	4	1533	18	20	46
	91	5	21	14	6	8	-	-	-	-	54	-	-	-	1800	14	24	54
	97	36	6	2	3	2	1	-	-	-	49	1	-	-	1000	17	36	50
D	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	1	4	1	2	-	-	-	-	-	7	-	1	-	266			8
	97	5	1	-	1	-	-	-	-	-	5	-	-	2	140			7
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	91	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	97	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	05%	95%	16%	- 5%
'91	56%	20%	04%	-53%
'97	14%	05%	03%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	2833	Dec:	0%
	'91	2699		10%
	'97	1260		11%